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Practical Electro-Therapeutics

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ELECTRIC CO.
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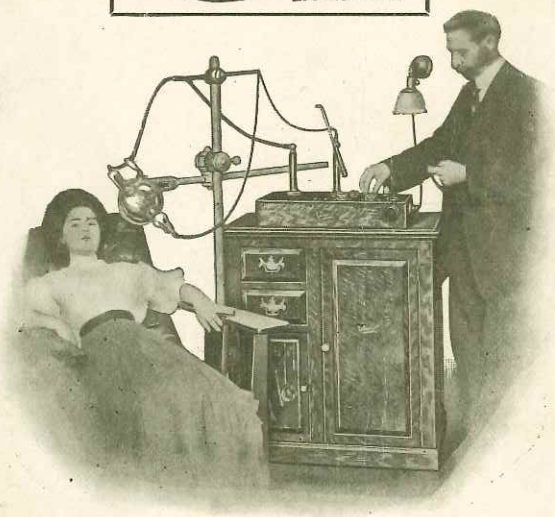

CAMPBELL X-RAY AND HIGH FREQUENCY APPARATUS

Are You One of These?

[From the *British Medical Journal.*]

One of the worst hindrances to progress in medicine is the "superior person" who looks with suspicion and contempt on any departure from the beaten track.

Campbell Electric Company

LYNN, MASS., U. S. A.

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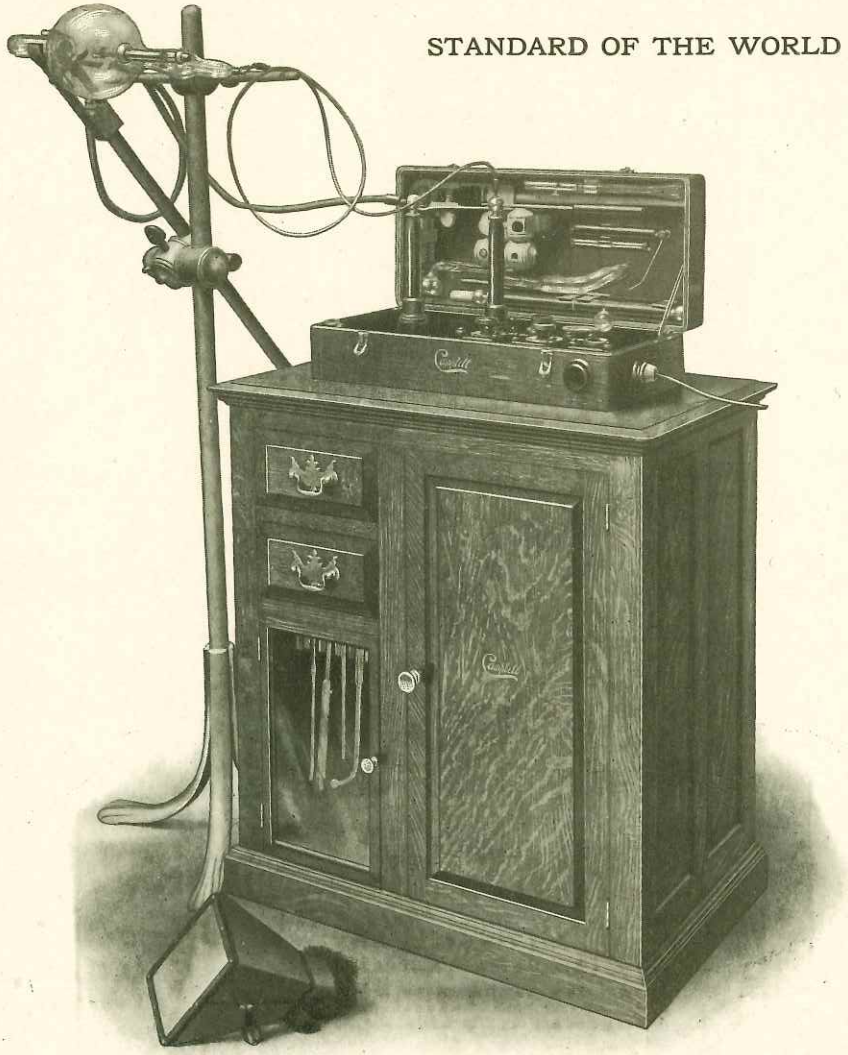
Campbell X-Ray and High Frequency Apparatus

STANDARD OF THE WORLD



PORTABLE
POWERFUL
PRACTICAL

Campbell Coil Model "E" with Cabinet

EFFICIENT
MODERN
RELIABLE

AN INVESTMENT FOR INCREASED REVENUE

This Equipment gives with fine regulation seven varieties of current, therefore can be used for almost every known form of Electro-Therapeutical treatment.

(For detailed illustration of Coil, see back inside cover.)

PRACTICAL ELECTRO-THERAPEUTICS

SECOND EDITION

CAMPBELL ELECTRIC COMPANY
INCORPORATED
Manufacturers of Electrical Apparatus
LYNN, MASSACHUSETTS, U. S. A.

THE HANCOCK PRESS, LYNN

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BY
CAMPBELL ELECTRIC COMPANY
LYNN, MASS.
U. S. A.

PREFACE TO THE SECOND EDITION

THE demand for our booklet has been so great and the comments on its subject matter so generally favorable that we have prepared the second edition with but few alterations.

Since the issue of our first edition, we have received a large number of reports of cases confirming the results already published and adding a number of new conditions in which the X-Ray and High Frequency currents have been successfully used. It has seemed unwise at this time to increase the size of the booklet, but rather to leave it for just what it pretends to be—not a complete text-book, but rather an introduction to the more exhaustive investigation of the subjects which are herein superficially treated.

For more complete treatises on the subject we would recommend:

Kassabian.	**Price**	**$4.00**
Beck—Roentgen Ray Diagnosis and Therapy.	**"**	**4.00**
Freund—Radiotheraphy.	**"**	**5.00**
Pusey and Caldwell—The Practical Application of Roentgen Rays in Therapeutics and Diagnosis.	**"**	**5.00**
Allen—Radiotherapy, Phototherapy, and High Frequency Currents.	**"**	**4.50**
Guilleminot—Electricity in Medicine.	**"**	**4.00**
Crooks—High Frequency Currents.	**"**	**2.00**
Bennett's Electro-Therapeutic Guide.	**"**	**2.00**

If we shall succeed in interesting the profession to pursue further research into more pretentious works, our object will have been accomplished, for careful investigation will reveal the fact that in the practice of today the various forms of High Frequency currents have established for themselves a permanent and important place, and for which there is no substitute of equal value.

Yours sincerely,

CAMPBELL ELECTRIC COMPANY.

Campbell
ELECTRIC CO.
LYNN, MASS.

CAMPBELL APPARATUS
IS RELIABLE

EXPERIENCE GIVES LIMITLESS OPPORTUNITY

HIGH-FREQUENCY AND X-RAY TREATMENTS HAVE SECURED POSITIVE CURES IN MANY AND ACTUAL RELIEF IN ALL CASES INCLUDED IN THE FOLLOWING DISEASES

For Suggestions in Method of Treatment in Cases of

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For General Suggestions in the use of High Frequency Currents See pages 5 to 7

Therapeutic use of the X-Ray
See pages 10 to 12

Hints for Successful Radiography
See pages 13 to 16

Campbell X-Ray and High Frequency Apparatus, Description, Complete, Prices, Value to the Physician from an Investment Point of View, etc., etc.
See our Catalogue.

"Any Disease that can be cured or relieved by the use of drugs can be cured or relieved by treatment with electricity. And more: Its effects are direct and far-reaching; it goes where drugs cannot follow."

EFFECTS AND APPLICATION

OF

HIGH FREQUENCY CURRENTS

THE field of usefulness of this form of Electrical treatment is so broad that it may almost be said to be unlimited. Scarcely a case comes into the office of the doctor in which it cannot be used to advantage. It has two distinct spheres of action, general and local. By its local action it will in a few minutes relieve or remove pain and soreness, local congestion and stasis. With the aid of the cataphoric electrode the application of local medication is much more rapid and satisfactory in its effects.

As to the general effect of these currents, a simple experiment will convince both physician and patient as to the far reaching distribution of their action. With the coil in operation and the bulb of the surface electrode held firmly in one hand, touch with a finger of the other hand the flesh of the patient or a gas fixture. A perceptible spark passes with a decided prickling sensation, or in the case of the finest and mildest current a sensation of slight vibration. From the fact that the skin is of high resistance it is extremely improbable that this is a surface conduction, but would clearly seem to prove that there is a general electrification of the entire person.

Each microscopic cell of the body is not only electrified but is in a state of intensely rapid vibration, a state of infinitely delicate massage. The elimination of dead cells is accelerated, as also their replacement by the constant supply of new cells, while through the nervous system functional activity is increased or restored.

Accepting or not this statement of theory as you please and coming to actual facts, what is the condition of the patient following a treatment? Mrs. A. comes to you for treatment suffering with neuritis. She has pain down the right arm, beginning at a point between the shoulders. This pain is worse at night, and during the previous night she has passed several sleepless hours, finally by aid of a hot water bottle securing temporary relief. Local treatment is given by means of the surface electrode over the painful area for a period of five to ten minutes followed by five minutes of general treatment along the whole spine. Your patient leaves the office with relief from pain, a sense of agreeable warmth over the entire surface treated which lasts for several hours, and a feeling of buoyancy and general well being. At her next visit she reports that the freedom from pain lasted from six to twenty-four hours, and that upon its return it was not so severe as before treatment. At each succeeding visit she tells of longer intervals of immunity from suffering and a gradual decrease of the severity of such paroxysms as do recur, until finally the full effect of each treatment is felt

until the time of subsequent treatment. The intervals of treatment can be gradually lengthened to twice a week, once a week, once in two weeks, and finally discontinued altogether, and the relief becomes permanent. Meanwhile she notices incidentally that there has been a marked improvement in her digestive system and general health.

In the following out of this case you have discovered several things: First, that the relief of pain is not simply an anodyne action, but depends upon restoration to normal function and conditions, that it is not entirely by reason of stimulation, for there is no reaction, and such relapse as does occur becomes less and less severe and pronounced after each treatment. You, therefore, may conclude that each application has produced a gradual restoration of normal conditions which is added to and reinforced by subsequent treatments. As time goes on without return of abnormal conditions, you also may safely conclude that relief is permanent; in other words, that your patient is cured of one of the most discouraging conditions that falls into the hands of the general practitioner, and, that in subsequent cases of the same nature you can safely promise probable relief. You have accomplished two things. You have acquired a grateful patient and you have received the personal sense of gratification which follows the relief of a stubborn case and a renewed confidence for future efforts in the constant and oftentimes discouraging battle against disease. Better still, you have done this without the use of drugs and feel that you have made a decided step forward in the path of modern scientific treatment.

While we have outlined the above case in a general way, it is not a fancy picture but a composite of actual experiences. As a suggestion of other applications of High Frequency currents let us draw another picture, in its essentials equally true.

Mrs. A. is so pleased with her results that she persuades her husband to consult you with regard to himself. He is in the whirl of business, working too hard, worrying too much, eating carelessly and smoking too many cigars. His stomach has "gone back on him." His food distresses him, he is constipated with more or less flatulence in stomach and bowels. His sleep is disturbed and unrefreshing and he begins to fear that his "nerves are giving out." He has dosed himself with several kinds of digestive tablets, but only with temporary benefit. In this case general treatment is given along the spine for ten minutes with a current from the body electrode as biting as can be borne without actual discomfort. This is supplemented with a five minute treatment of milder current over the solar plexus and abdomen. He has probably come to you for treatment in the evening and he leaves your office feeling more refreshed than he ordinarily does after a night's rest. His sleep for that night is less disturbed and more refreshing. A course of treatments on alternate days for a period of from three to six weeks puts Mr. A. on his feet once more and you see him only at irregular intervals when, after a particularly hard strain, he comes in for a bracer.

Later on little Johnny A. breaks his arm and you find that when you have taken off the splint a few applications of High Frequency assist you materially in restoring the circulation and hastening the return of muscular

control. Nature would have done this in time, but you have aided Nature; the true mission of the physician.

Each case treated will lead to another, and in the treating will be brought out some new use or possibility of application of this form of therapy. Each operator will *independently* and from his *own experience* establish a line of work *limited only by his own powers of observation and deduction* and the amount of clinical material.

Just a few suggestions as to the various possibilities of high Frequency treatment and we will leave the elaboration to the individual practitioner.

In diseases of the skin there is three-fold action of the applied current, direct stimulation, the antiseptic and germicidal action of the generated ozone at point of application, and the general tonic effect. It forms an important auxiliary to the X-Ray in the treatment of indolent ulcers, morbid growths and glandular disturbances, either by direct application or as a means for cataphoresis. The action on the nervous system has already been sufficiently described. In sprains and bruises it removes the pain and soreness and materially assists reabsorption. In chronic arthritis it hastens the process of recovery and is believed by some to promote the reabsorption even of chalky deposit. It will destroy warts and fungus growths.

THERAPEUTIC USE OF THE X-RAY

LIMITATIONS AND DANGERS OF THE X-RAY. Immediately following the introduction of the Roentgen ray into the field of therapeutics commenced a widespread investigation on the part of scientific and professional men as to its possibilities as a remedial agent. Wonderful results followed this investigation but the fact also was soon discovered that while it was a powerful curative agent it was also a potent agent for harm when indiscriminately applied and many of the earlier experimenters paid a heavy penalty in the way of physical suffering, loss of limb and even of life. The inevitable reaction followed and many of the more conservative medical men condemned its use in toto because of its mischief producing power. Any form of energy misdirected or misapplled will produce disastrous results, it would not otherwise be energy. But, just as death dealing currents of electricity are harnessed and made to serve man in the arts and sciences without danger so long as certain precautionary measures are observed, so the application of the X-Ray has come to be made not indiscriminately, but under certain precautions and restrictions which experience has proven to be necessary, and its use today is the safer because of the very errors of the earlier operators. Forewarned and forearmed the operator of today can avail himself of its beneficial properties with little or no danger to himself or patient.

CAUSES OF UNFAVORABLE RESULTS. Let us briefly consider a few of the principal causes of early disaster as disclosed by subsequent experience and investigation.

First, the most mischievous of all the properties of the X-Ray, its effects, either for good or evil are not immediate. An undue exposure today may not show its action for days or in some cases according to several authorities for weeks.

Second, its effects are cumulative, that is, each application produces an effect from which there is not entire reaction, rendering the tissues more susceptible to subsequent applications, which reinforce the effects of their predecessors.

Third, a more or less profound effect is produced upon the nervous and circulatory system, thereby modifying functional activity.

Fourth, the rays penetrate in direct proportion to the degree of vacuum in the tube producing them, and the rays of low penetration are more destructive of tissue while those of higher penetration are more active on nerve and circulatory centres.

Fifth, abnormal conditions of tissue are more easily effected than normal, therefore, abnormal growths may be destroyed by an absorption of rays which leave the surrounding tissues practically intact.

Sixth, the activity of the ray varies inversely as the square of its distance. A radiance which will produce a clear image on a sensative plate in one minute at a distance of one foot will require four minutes to produce the same effect at a distance of two feet.

Bearing these points in mind, the operator can work with a reasonable assurance of success, and immunity from disastrous effects.

ADOPT UNIFORM TECHNIQUE. The technique of radio-therapy has changed so rapidly from the time of its introduction, and the methods of individual operators today are so widely diverse that we could not in the space of a small pamphlet discuss them intelligently. Therefore we would refer our readers to the text-books of recent date, and we say recent advisedly, for, an operator who today should follow the methods of the standard authority of ten years ago would find himself led into gross error.

We therefore shall confine ourselves to a few general suggestions which we hope may be the foundation for a more complete and precise method.

In reading the reports of various cases one is struck by the variety of distances at which the tube is placed from the part to be treated, and the novice is in despair as to whose authority he shall follow. It is well therefore that he should adopt some uniform distance as his own standard, varying the amount of effect to be produced by the length of his exposure. In this case he has one constant factor out of the several to be considered, viz., distance, degree of penetration, volume of current through the tube and length of exposure. His first condition being constant he will easily be able to more or less accurately regulate the others, as with the same exciting apparatus and the same tube they will be practically constant. Incidentally the writer has taken as his constant, one foot; and by the way, when we say a foot we mean one foot from the centre of the tube or target. In treating a case covering considerable surface such as cancer of the breast, acne, psoriasis, etc., it is well to place the tube at a distance of 15 to 18 inches and increase the time of exposure, otherwise only a small area directly under the target will receive sufficient ray to be effectual.

PROTECTION OF PATIENT AND OPERATOR. A photographic plate in the same room with an excited tube, and even in an adjoining room will be acted upon by the rays, therefore the whole atmosphere of the room is more or less permeated with radio-activity. This may be more or less weak in its action but the constant exposure of the operator even to a moderate degree of radiance is more or less dangerous, and the men who today are living in this atmosphere are adopting various means to avoid exposure, protective gloves and clothing, ray proof screens or cabinets, or even leaving the room during treatment.

This applies more particularly to the specialists who are constantly exposed to the emanations from a powerful machine. The operator should always remain behind the luminous half of the tube and at least four or five feet distant, while treating a patient.

For the average user who treats not more than four or five patients a day, this is all the protection required.

The most simple and effectual means of protection, both to operator and patient is the use of a tube shield which cuts off all rays except those issuing at right angles to the tube and restricting these to any desired area by the means of diaphragms of varying size. The use of the tube shield also obviates the necessity of covering the patient with cumbersome lead plates, as the area of exposed surface can be limited to a spot an inch in diameter. The tube shield also plays a useful part in the making of radiographs of which we shall have occasion to speak when we come to the subject of successful plate making.

FREQUENCY AND LENGTH OF TREATMENTS. In the treatment by X-Ray it is well to make haste slowly. It is generally accepted by the users of this method of treatment that occasionally we find a patient who seems to be particularly susceptible to its effects, therefore it is a good plan to administer one treatment, wait at least a week before repetition and note results. From this time treatments should be given not oftener than every third day, increasing the interval according to improvement made, and discontinuing upon the least appearance of redness of surrounding tissue until at least a week after this shall have entirely disappeared. The length of the first treatment should be from five to eight minutes and the subsequent ones from ten to fifteen minutes.

WHAT VACUUM TO USE. There is a wide diversity of opinion as to the degree of vacuum of tube to be used according to the experience of the individual operator, but, from the fact that the chemical action of the low vacuum tube is much more powerful, and that even in superficial conditions there seems to be decided action from the medium, or even high tube, it is safer to use the medium or high tube. This has been the method of the writer for the past seven years and in that time he has obtained satisfactory results in a variety of conditions varying from Eczema to Carcinoma, and in no case has there been an appearance of the much to be deplored X-Ray Dermatitis or Burn.

A FEW HINTS FOR SUCCESSFUL RADIOGRAPHY

RADIOGRAPHY IS AN ART—NOT A MECHANICAL PROCESS SIMPLY. IF you would be reasonably successful read CAREFULLY the following hints

SATISFACTORY RADIOGRAPHY. One of the most difficult as well as important uses of any type of X-Ray apparatus is the production of satisfactory radiographs, and it is in this particular part of his work that the novice is most likely to be disappointed. He has seen beautifully distinct plates with a wealth of detail, produced by apparatus of the same type as his own, or possibly by the apparatus of a rival manufacturer who is seeking to demonstrate the superiority of his coil in this line of work, he fails to get the same class of work and condemns his apparatus as inadequate.

Because we are satisfied that the Campbell Coil is the best X-Ray apparatus among the many types of High Frequency Coils now on the market; because its capabilities in the production of good radiographs rivals that of the better class of direct current coils, and because we desire that our patrons may prove this fact to their own satisfaction, we propose to enter rather fully into the question of radiography, discussing the causes that contribute to unsatisfactory results and offering a few suggestions that will lead to more uniformly successful work.

The writer has been making radiographic plates for the past ten years, and in that time has made use of two types of Static Machines, two types of Direct Current Coils and three types of H. F. Coils including the Campbell. In this time the largest proportion of satisfactory work has been done with the Campbell, and the annoyance caused by failure on the part of the apparatus to be ready for business at a moment's notice has been absolutely unknown.

SIMPLE PRINCIPLES OF RADIOGRAPHY. To illustrate the factors that contribute to success or failure in the making of a radiographic plate let us try a series of very simple experiments which clearly demonstrate the principles involved.

The apparatus necessary for these experiments is a candle, a lead pencil, and a sheet of white paper. In a darkened room place the lighted candle at a distance of one foot from the sheet of paper, hold the pencil at a distance of half an inch from the paper in a direct line with the candle, and note the result. There is a well defined shadow on the paper, approximately the same width as the pencil. Carry the pencil to a point midway between the candle and paper, still in a direct line, and the size of the shadow is increased and at the same time bears less contrast to the fully illuminated portion of the paper. Bring the pencil back to its original position, move the candle to one side so that it will cast a shadow at an angle of forty-five degrees and note the result. The shadow is somewhat less distinct, it is considerably wider than the pencil, and is at a point one side of the line drawn at right angles to the paper and through the centre of the pencil. Increase the dis-

tance of the candle, and while the distinctness of the shadow is diminished, the distortion is also materially lessened.

Bearing in mind that the radiographic image is nothing but a shadow of different objects of varying density which present more or less obstruction to the free access of the ray to the sensitive plate or screen we have established by our absurdly simple experiments a number of facts which have an important bearing on the production of a truthful and satisfactory image on the plate.

First: the nearer the object to be pictured approaches the plate the more will its shadow be in contrast to the surrounding objects, and the nearer will it approximate in size the object which casts it. Second: as we increase the distance of the object from the plate the more out of proportion is its size, and it is much less clearly defined, by reason of diffusion of light between itself and the plate. Third: if the object is not in a line at right angles from the source of illumination to the plate its shadow will be magnified, distorted and out of true relation with surrounding parts. Fourth: as the distance of illuminating source is increased the nearer the shadow approaches the object in size and the distortion of image, if any exists is decreased.

One more self evident principal is involved, namely, that the contrast of the shadow with surrounding objects increases directly with the increase in intensity of the illumination.

THE X-RAY TUBE. Given an adequate exciting apparatus, the first requisite for good work is a tube of sufficient power and endurance to fulfill the requirements for the most difficult work, and you will find that such a tube is none too good for less exacting cases. It is a great mistake to attempt to use a light anode tube for deep work—or for any work in fact except the treatment of superficial lesion. With such a tube the amount of heating, from current sufficient even for a short exposure, is likely to produce a variation of vacuum during the exposure which will make the subsequent result too uncertain for the production of uniformly satisfactory results, and the life of activity for such a tube is much more limited than that of one whose initial cost is but a trifle more.

Years of experience have led to the fact that for the Campbell Coil the best tube for radiographic work is one of high vacuum, and such tubes as are sent out for use are of this character. The best and most rapid results are produced by a tube of such degree of exhaustion that it will possibly require slight reducing before it will fluoresce. In this event reduce with caution, as after a short run there is a tendency to slight drop in vacuum. Two tubes of identical make and pattern are as unlike as two children of the same parents. One may be industrious, good natured, always ready to do his best, while the other may need more or less coaxing or driving to bring him up to satisfactory accomplishment. *A new tube needs to be attuned to the coil before it is at its best and seems to undergo a certain seasoning which gradually brings it up to its maximum efficiency. In breaking in a new tube baby it for a while; do not give it the hardest work at the beginning.* If possible to avoid it do not depend upon a single tube for all your work. Two tubes in use at the same time according to the individual capabilities of each

will outlast three tubes bought consecutively and made to do all the work. Above all things do not use the same tube for radiographic and therapeutic purposes. The latter use, from the length of time which it is necessary to run the tube, and the lesser degree of vacuum which is needed for therapeutic purposes, render it unsuitable for first-class plate work. Test out each new tube before using for actual work. A good test is to make a plate of an adult elbow at eighteen inches from the tube (target), expose for one and one-half minutes and develop. If image of bones is clear cut and distinct, medullary canals well defined, the outline of the head of the radius behind the ulnar distinct, and the lines of the condyles sharp you have proven that you have a tube of good focus and penetration and at the same time established a standard of exposure for other parts of the body. With the same tube, at the same distance you will calculate your time of exposure approximately as follows: wrist one-half to one minute; shoulder three minutes; ankle same time as elbow; knee two to three minutes; hip six minutes; thorax and upper spine three to five minutes; lower spine four to six minutes.

These figures are necessarily approximate as the amount of soft tissue surrounding the bone will vary widely with the age and weight of your subject. Three factors will have to be determined by estimation which after short experience is easily acquired.

THE PLATE. All photographic plates are sensitive to the X-Ray and are capable of furnishing an image but the specially prepared X-Ray plate is enough better for this purpose to more than compensate for the difference of initial cost. On it is produced a denser, clearer image, in a shorter time, and much more easily developed. Just a word as to the care and handling of the plates. They should be kept in a place sufficiently remote from the operating room to be entirely away from the influence of the excited tube. They should be placed in the envelope at the last possible moment previous to use and while being loaded should be kept as much as possible even from the influence of the dark-room light, for, so sensitive are these plates that they will be more or less acted upon even by a combination of ruby and orange light. In placing the plate beneath the body two precautions should be observed. It should be supported by some perfectly flat unyielding object, (a half-inch of plate glass makes a convenient and firm support and at the same time causes little discomfort to the patient). It should be protected from the moisture of the body by a piece of oiled fabric or a folded towel, otherwise there will be sufficient chemical action from the black envelope to materially injure the plate as the writer has found to his cost by sad experience. After exposure protect the plate from daylight as much as possible, and develop, or have it developed as soon as convenient. If possible do your own developing. This is advisable for several reasons. The development of an X-Ray plate differs materially from that of an ordinary photographic plate in that to bring out its full detail and make it of sufficient density for satisfactory inspection by transmitted light development should be carried to a point considerably beyond that which is required for the ordinary negative. An ordinary negative is either properly exposed, over-exposed, or under exposed. The X-Ray plate is all three. A certain part of it has

received just the proper amount of exposure while other portions have been over and under exposed. Therefore instruct your photographer to treat it as he would an over exposed plate, carrying the development to a point where the thinnest part of the plate is opaque to transmitted light, at the same time avoiding fogging. By developing his own plates the operator has in the development an accurate key to his errors in exposure and will sooner learn to correct them than when they are developed by some one else. At the same time he will be able in case he is somewhat in doubt as to the result of his exposure to develop the plate while the patient is still in his office, and repeat the exposure at once if necessary. In the case of a foreign body to be located, the plate can be immediately developed and the offending substance removed before the patient leaves the office. This is particularly important in the case of needles, as when the removal is attempted some hours subsequent to the exposure it is often discovered that the location of the needle has materially changed. This is a source of annoyance to the surgeon as well as to the radiographer, to say nothing of the patient.

DEVELOPMENT. We believe the operator will get better results by using a special X-Ray developer recently put upon the market, called X-OL developer. As supplied by the manufacturer, X-OL consists of two elements, put up as X-OL Developer and X-OL Salts. These may be compounded in any quantity, using the following proportion:

FORMULA

X-OL Salt	2 oz.
X-OL Developer	⅛ oz.
Water	10 oz.
Bromide of Potassium (25 per cent. solution)	1 dram

This developer may be used repeatedly until too weak or discolored. Keep temperature below 80 degrees F. when developing.

PRICES

X-OL Salts per 1-lb. bottle, 35c. X-OL Developer per 1-oz. bottle 30c.

The time required for a proper exposure depends upon three principal factors. First; the amount of resistance offered to the ray by the part to be pictured. Second; the degree of penetration and volume of current passing through the tube. Third; the distance of the tube from the plate.

ESTABLISH A UNIFORM DISTANCE FOR EXPOSURE. By the adoption of a constant distance of tube from plate one of these factors of uncertainty will be removed, and, with the Campbell Coil, the tube once tested out its subsequent action will be practically constant. This will leave as the only uncertain factor the penetrability of the part to be radiographed. This the operator will soon learn to estimate with a fair degree of accuracy. Experience has proven that the distance of eighteen inches between tube and plate is a convenient one as even in the case of the thicker portions of the body it does not bring the tube unduly near the patient nor does it require an unduly long expeosure.

PROTECTION OF OPERATOR AND PATIENT. Aside from the rays issuing practically at right angles to the tube there are also apparently wandering rays tangent to the surface of the tube. *The use of a tube shield will cut off these wandering rays giving a more sharply*

defined image and at the same time protect the patient from general exposure to the action of the rays. Owing to the comparatively short time of exposure the danger to the patient is practically nil, yet within the last few years has developed the fact that there is a decided inhibitory action upon the organs of generation, even of operators who are remote from the direct rays of the tube. The amount of susceptibility to this action and its duration has not yet been accurately determined, therefore it is better to err on the safe side and avoid any exposure whatever of testicles or ovaries to even indirect radiation.

In a recent case where it was thought advisable to sterilize a man by means of the X-Ray, it was found necessary to give 27 treatments of 15 minutes each at a distance of 15 inches, before the spermatzoa were entirely absent. A powerful coil was used in this case, so it would appear that the average user has little to fear on this score.

CONCLUDING SUGGESTIONS. In making a radiographic plate the prime requisite is that the part to be pictured shall be as comfortable as possible and in a position which is likely to avoid the least degree of motion during exposure. The tube should be placed with its long axis parallel to the plane of the plate and the centre of the target in such a position that a plumb line dropped from its centre will fall directly on the centre of the plate, and at right angles to it. Start the tube with a small amount of current, gradually increasing the volume, until the desired amount is passing through the tube. From this point time your exposure. Adjust the spark gap until the tube does not flicker but gives a steady and even degree of radiance as wide open as possible. When the exposure is finished, reduce the current, and than throw off the main switch. By the gradual increasing and decreasing of current through the tube possible puncture is avoided and the tube is not subjected to a sudden or undue strain.

In the case of fracture, or suspected fracture, when possible make two plates in planes at right angles to each other. An apparent perfect relation of fragments in one plane will often show deformity in the other. Two plates are also of great importance in the locating of foreign bodies. In making a radiograph of the hip have your patient if possible partly turned on the injured side. In this position the femur is considerably nearer the plate and the axis of the neck more nearly parallel to the plane of the plate. The shadow will be more in contrast with surrounding parts, the foreshortening of the neck will be less and the outline of the acetabulum more definite.

Given the best apparatus and a skillful operator and not every plate is a success. With so many uncertain factors there are necessarily some poor plates and some failures. Neither the operator nor the manufacturer of a coil take pains to exhibit the poor work or dwell at length upon the failures. Perhaps you have noticed this same tendency in other branches of professional work. But, what has been done can be done again, with the same conditions under which successful plates have been made you can repeat the results for yourself. We have tried, and hope we have succeeded in so doing, to give a few hints that will enable you to avoid some of the stumbling blocks. If you do not get the results that you should reasonably expect, communicate with us and we will give you further assistance.

TECHNIQUE

With regard to the technique, when a soothing effect is desired as in sensitive or inflamed areas, use the glass vacuum electrode in direct contact with the skin. If counter-irritating effect is desired, as in chronic conditions, or in the treatment of ulcerations where a free production of ozone and stimulation gives the best results, apply through several layers of bandage, or clothing, but be very cautious in passing current through light inflammable material and *do not* pass current through or in close proximity to collodion or oily dressings. The spinal treatment may be given through light underclothing and the slight sting of the spark is not altogether disagreeable and at the same time somewhat more stimulating in its action. In working about the head and face it is well to use the finest discharge from the electrode and keep it constantly in motion. In the use of stronger currents this constant moving of the electrode is essential, else the application will become painful and an excessive local irritation will result. It is not unusual that a general redness of treated surface, due to increased capillary circulation, should follow application; indeed in many cases this is desirable an the sensation of grateful warmth is due to this increase of vascular action. But, be sure that this is not allowed to pass the point of stimulation which becomes irritation.

With the first treatment of a patient it is best to begin with the mildest current, gradually increasing its strength at subsequent sittings up to the desired point of intensity. A large proportion of people taking a treatment for the first time, and more especially women and children, are more or less apprehensive and expect to be hurt, or at least to experience more or less profound sensations. One judiciously applied treatment dispels this apprehension and at subsequent sittings you have the perfect confidence of your patient which is so essential in any method of treatment, but particularly so in any form of mechanical therapeutics. In applying the more irritating currents it is well to hold the electrode in your own hand until it is in direct contact with the surface to be treated, thereby avoiding the disagreeable sparking which accompanies its approximation.

One point we would emphasize. Be sure that the first impression of your patient is an agreeable one, for on this depends your success or failure, not only on the case in hand, but also in subsequent ones. A large proportion of sufferers, especially those from nervous disturbances are prone to discuss their various symptoms and experiences and are free to criticise the methods of their physician from their own point of view, without regard to its actual merits or demerits. Therefore, be sure and send your patient from your office with a favorable impression.

REPORTS OF TREATMENT

WITH GENERAL SUGGESTIONS

ACNE. J. H. R. came to my office after repeated efforts to cure himself by patent remedies, and after failure to get relief by these and other old fashioned methods of treatment. I used the X-Ray with medium tube first on one side of the face and then on the other, placing the tube at eight inches from the affected parts. I gave this treatment ten minntes at a time every other day. On alternate days I applied a fine discharge from the pointed vacuum electrode directly to several large pustules. The pustules were entirely reduced at the end of ten days, and the patient was discharged cured at the end of a month's treatment.

I have cured nearly a score of such cases. I always impress my patient with the importance of regularity of treatment, and of not becoming discouraged because the affection appears to be aggravated during the early stages of treatment.—Dr. H. L. J.

A number of operators report similar success in this obstinate and annoying condition.

ACNE ROSACEA. I have successfully treated several cases of Acne Rosacea by the X-Ray, using a medium tube, ten inches from the surface, giving treatments on alternate days. The High Frequency current should be applied with the vacuum electrode, either on alternate days, or if conditions are favorable, every day.—Dr. E. M. S.

ACTINOMYCOSIS. F. J. C. came to me for treatment. I applied the X-Ray with the low tube ten inches away, from ten to fifteen minutes at each sitting. He could come but twice a week but was cured in ten treatments. I did not find electrolysis necessary in this case but have used it to advantage.—Dr. M. W.

ALOPECIA AREATA. A number of authors report success in the treatment of this condition by application of the X-Ray to affected areas. A medium tube has been used at a distance of eight inches, and from two to five applications of ten minutes duration. This has resulted in epilation of the affected parts and the subsequent growth of normal hair.

ANUS, FISSURE OF. Dr. H. P. reports treatment in three cases. All secured relief and one, after a year's time, appears to have been entirely cured. "I used the Campbell High Frequency Coil with vacuum tube in contact, varying the strength of current and giving an occasional spark. Avoid tiring patient with too long treatments."

ARTHRITIS DEFORMANS. Prolonged use of the X-Ray and the High Frequency current not only relieves the pain and prevents farther development of the disease, but has proved in a considerable number of cases, to have a decidedly curative effect.

ARTHRITIS RHEUMATOID. Patient—female, 38—had lost use of right hand, and muscles were withering; suffered extreme pain. Tried various proposed remedies including baths, massage and local applications of iodine. Came to me for electrical treatment. Gave general tonic applications with special applications of effluve to hand. After three months' treatment, twice weekly, use of hand restored and general health.—Dr. J. E. B.

ASTHMA. Mrs. L., 32, came to me for medicinal treatment for stuffiness in her throat that kept her awake nights. I proposed treatment with the High Frequency current but as she manifested prejudice against it, tried medicinal treatment, tonics, etc., without improvement. Decided that it was incipient asthma. Patient returned following winter for treatment and conditions were worse than the year before. She willingly yielded to electrical treatment and I placed her on the auto-condensation couch for fifteen minutes. Asthmatic attack was relieved the first night and diminished steadily with daily treatments until entirely gone at the end of one month. Though the weather was unusually "favorable" for recurrence there was none, nor has there been during the last two winters.—Dr. L. C.

Any case of Asthma due to defective metabolism or a neurotic condition, should be promptly relieved, or even cured, by the use of the D'Arsonval current through our "Auto-Pad." We have reports of a considerable number of cases cured.

BAZIN'S DISEASE. (Scrofulous ulcers of the leg.) Patient female, age 20, anæmic, extremities cold, a number of ulcers on the right leg; no tubercular history. Thirty applications of High Frequency current made in three months, giving spray effluve with flat electrode on limb, and general treatment for ten minutes on auto-condensation couch. Ulcers closed leaving skin smooth and clean, and there has been no recurrence.—Dr. B. E.

BARBERS' ITCH. This disease has been treated successfully, by many operators both abroad and in this country. Both the X-Ray and vacuum electrode have been used with success. For detailed methods see any one of the recent textbooks on Radio-therapy.

CARCINOMA. Reports of complete and speedy cures of superficial growths by the use of the Campbell X-Ray have been sent in from no less than eleven states and representing the successes of scores of physicians. The majority of treatments have been with a medium tube at a distance of one foot, the exposures varying from eight to fifteen minutes. Deep seated growths have been treated with apparent success by the use of a high vacuum tube at a distance of from one foot to eighteen inches.

CATARRH NASAL. This condition has been successfully treated by the High Frequency current applied as a general tonic and directly to the affected parts by the use of the nasal or post-nasal vacuum electrode, using a very mild current. Local treatment has lasted from one to three minutes, depending upon the toleration of the patient.

Atrophic Rhinitis and Ozena are very much benefitted by the vacuum electrode, the odor and discharge being promptly relieved. Some cases of Ozena have been reported cured.

CERVICAL GLANDS, ENLARGEMENT OF. Dr. F. reports the cure of a number of cases of cervical adenitis both with and without suppuration. Treatment has been given with a high vacuum tube at a distance of one foot. Duration of treatment five to ten minutes and at intervals not less than five days. Almost from the first treatment induration becomes less and there is a gradual reduction of size. Discharge if any decreases and gradually disappears after a few treatments and scabs drop off leaving slight scar. One particularly persistent case which had recurred yearly for a period of five years, with increased severity each year, yielded to a course of several months' treatment, and in five years has shown no signs of recurrence. In fact, so far as known there has been no recurrence in any of the cases which he has treated. In none of these cases has there been any dermatitis, and upon the appearance of the slightest degree of redness treatment has been discontinued until one to two weeks after its disappearance.

CHLOROSIS. Miss G.—22 years old—came to me for treatment after her parents had spent large sums with other physicians. I discharged the patient cured after six weeks' treatment, three times a week. I administered the High Frequency current by auto-condensation, each treatment lasting 15 minutes.—Dr. J. C. D.

COLITIS-CONSTIPATION. Chronic case of over twelve years standing. Mrs. J. S. B.—35 years old—could not have movement without strong carthartic or enemas. I made abdominal applications of High Frequency current, fifteen minutes daily for three weeks when bowels began moving regularly. Patient gained twenty pounds in two months and is now well one year after treatment.—Dr. H. O. B.

Auto-Condensation two or three times a week for ten minutes together with the local application of the vacuum electrode over the colon, will usually relieve the cases. Where constipation is a marked sympton, the use of the insulated rectal electrode will prove efficient.

DEAFNESS, CATARRHAL. Patient, female, 48; has been unable to hear except by use of ear trumpet and then with great difficulty at times. I adopted treatment with small High Frequency electrode applied to each ear alternately for five minutes. This was followed with fifteen minute treatments on auto-condensation couch, during which region of ears was massaged gently. Immediate improvement of general conditions was noticeable After two treatments a week for three months hearing was much improved;

recovery of hearing complete after treatment continued greater part of a year. Nasal catarrh which was also serious, disappeared without special attention.—R. Q. T., M. D.

DIAGNOSIS. I use the Campbell X-Ray apparatus constantly for fluoroscopic work in diagnosis. It is indispensable.—Dr. D. C. T.

DIABETES. Can be greatly relieved and progress of disease retarded by local application of High Frequency current, front and back, with mild effluve. Excellent results have been reported where patients were unable to leave their homes.

Auto-Condensation is also of the greatest service in these cases.

Dr. S. writes: "I have been appealed to in three instances where the patients were suffering with advanced diabetes and confined to their beds. The first treatment (brief because of the patient's weakness) with the High Frequency current from the Campbell portable coil gave great relief. In two cases the patients left their beds after the second treatment, and the lives of all three were prolonged many months in comparative comfort. I believe that I could have cured them had I been called in the first stages of the disease."

DYSPEPSIA. Dr. L. J. writes that he has secured prompt and satisfactory results by treating mild cases of dyspepsia with the High Frequency current and cured one case of over twenty years standing. Patient, male, 51 years old, had suffered excruciatingly for over twenty years; greatly reduced in flesh, nervous and despondent. At time of first treatment had eaten nothing for forty-eight hours. General treatment was given with the High Frequency, special applications being made over the region of the stomach for ten minutes. Marked improvement was noted from the first. Patient came daily for three weeks then every other day for a month and was discharged cured.

ECZEMA. Many cases have been reported by a host of operators of cure by the X-Ray. Reports of cures by the High-Frequency applied by the surface vacuum electrode are also numerous. A combination of the two methods has seemed in many cases to give the quickest and most satisfactory results. Perhaps no single disease has been as universally treated with the X-Ray as eczema and with such a large proportion of satisfactory results. Here the stimulating and not the destructive effect of the X-Ray should be used, hence the treatment should not be too prolonged.

EPITHELIOMA. This is the one disease of the cancer family in which the use of the X-Ray has been least disappointing and many scores of cases have been reported of entire cure by this method of treatment.

The destructive effect of the ray is required in these cases and consequently the case should be carefully watched and the treatment stopped for at least three weeks on the appearance of a mild dermatitis. Too small an amount of X-Ray acts as a stimulent and consequently an epithelioma will be

aggravated if a stimulating instead of a destructive dose is given. Protect the surrounding surface with lead foil, leaving a ring of healthy tissue around the lesion and watch this ring carefully for reaction.

EYES. Various conditions of the eye, varying from simple conjunctivitis to the deeper seated and more serious conditions, have been beneficially treated by the application of a mild current of extreme frequency by means of the special eye electrode. In treating the eye it is well to proceed with extreme caution, avoiding any local irritation.

FAVUS. Dr. B. U. Y. reports one case apparently cured by the use of the X-Ray, medium tube, applied from six to ten minutes every second day for a month, and there are a number of cases reported as having been successfully treated by European operators.

FURUNCULOSIS. Dr. J. C. D. has secured excellent results by the use of mild sparks from the High Frequency coil given for a brief time daily.

GASTRITIS, CHRONIC. "I was attending a patient, female, 40 years old, who had been subject for several years to severe attacks of Gastritis, confining her to her bed from a week to a month at a time. I heard of the Campbell High Frequency coil and bought one, hoping (I must admit as a last resort) that by taking the coil to the bedside of the sufferer I could perhaps save her. The result was beyond my highest expectation. Improvement noticeable after the first treatment. Gave general treatment with localized effects by means of the D'Arsonval attachment ten to fifteen minutes daily for two weeks, and three times a week for six weeks. Patient continued treatment at my office once a week for three months, and a year and a half from the time of first treatment has had no recurrence of trouble." —Dr. L. B.

GLEET. Scores of cases of speedy relief and prompt cure have been reported. To mention one, Dr. S. A. R. writes: "Patient 25 years old, was suffering with Gleet and Stricture and had tried numerous remedies without relief. I administered the High Frequency current through urethral electrode for three or four minutes. First treatment gave relief and patient was discharged after four sittings in eight days. If urethral electrodes cannot be used rectal electrode will give relief, as will large surface electrode in contact with the perinaeum.

GOITRE. Dr. A. R. D. of Oregon reports one bad case: "Patient female, 40 years old, growth hard and prominent. Gave X-Ray treatment with medium tube daily for three or four minutes at first, increasing the time to five or six minutes, always following with effluve from High Frequency for a few minutes. I found that hand and vibratory massage was an excellent accompaniment. The goitre disappeared almost entirely at the end of six weeks. Patient was so much pleased with the removal of the disfigurement and secures so much benefit from High Frequency application that she has continued regular treatment." A number of cases have been reported

as cured by the use of the X-Ray, either alone or alternated with the High Frequency. It is well to bear in mind the possibilities of treatment by cataphoresis.

GOITRE, EXOPHTHALMIC. This distressing disease is probably more amenable to the X-Ray and High Frequency treatment than any non-surgical method. The writer has known of some twenty cases either symptomatically cured or very much benefitted. An application of the X-Ray for five to seven minutes and the vacuum electrode for an equal time seems to give the best results. An article in the Journal of the American Medical Association, March 7, 1908, by Finley R. Cook, M. D., gives details of treatment and results in five cases so treated.

GOUT. Many instances are reported where immediate and grateful relief has followed local treatment with the High Frequency current. To obtain the best results mild treatments should be given daily, suspending during acute exacerbation.

Auto-Condensation improved the metabolism and is indicated in all stages of gout. The results are superior to any other method of treatment.

HEADACHES. Will be relieved at once by application of mild effluve over affected area and along cervical vertebræ. Treatment should be continued until pain ceases. Reddenning of the surface treated indicates that the application has been of sufficient length.

HEMORRHOIDS. Dr. M. S. reports two cases cured. One specially bad one was a young woman, 35 years old, who had suffered for fifteen years, at times being unable to either stand erect or sit with comfort. Says the doctor: "Being very much debilitated I began treating her with High Frequency for the general tonic effect, and also applied the current with rectal vacuum electrode five to ten minutes daily during two weeks. Then I gave one treatment weekly with application of the vacuum electrode fifteen minutes. Improvement was steady from the first until patient was discharged three months later."

Patient, male, 36 years old. Hemorrhoids would protrude on defecation. Used High Frequency current with rectal electrode twice a week for three weeks.—Dr. S. A. D.

HYSTERIA. The auto-condensation couch will be found especially valuable in treating cases of Hysteria. Give mild treatments with the High Frequency being careful not to alarm the patient with the sparking of the coil.

The current obtained from our "Auto-Pad" is particularly well suited to these cases, as there is practically no sensation even though the patient may be receiving 500 or 600 milliamperes; she being comfortably seated in any chair with one electrode in the hand, there is nothing disagreeable or distasteful about the treatment.

INDIGESTION, INTESTINAL. Dr. R. P. O. of New York city, writes: "Patient, male, 45 years old, in bad condition, vitality very low. Gave daily treatments at his home with Portable High Frequency coil for one week. Continued same treatment second week, introducing the auto-condensation couch. During third week used the High Frequency current with D'Arsonval attachment. Improved condition was noticeable from the first. Treatments continued with diminished frequency for two months when patient was discharged cured and grateful."

INDIGESTION, ACUTE. Dr. C. W. R. writes: "Patient, male, 50 years old, has been a long sufferer. Accustomed to hard labor but often forced to quit work in the middle of forenoon or afternoon because of pain so intense that he rolled on the floor in agony. First treatment with High Frequency current gave immediate relief. Continued treatment at irregular intervals for two months when patent ceased calling, saying that he was not troubled any more. My treatments were general with local application to region of stomach until pain ceased."

INSOMNIA. By electricity the sleep that is produced resembles that of childhood, and it is unaccompanied by any headache, disturbance of digestion, constipation, or nervousness, all of which symptoms are accustomed to be met with in those for whom sleep-producing drugs have been prescribed. The sleep which electricity gives rise to is not only sound but decidedly refreshing, and—still further—not only do High Frequency currents induce sleep but they improve the tone of the system to such an extent that the patients are better fitted to resist and overcome the evil influences of business, educational or domestic cares or anxieties.—"Somerville H. F. in Insomnia," 1905.

KELOID. X-Ray will permanently cure a large proportion of these cases. Medium tube at about twelve inches two or three times a week until slight reaction occurs.

LARYNGITIS, CHRONIC. Dr. T. R. R. urges us to emphasize the value of High Frequency currents in treating obstinate cases of Laryngitis. He secured prompt relief and speed cures in five cases by using the vacuum electrode designed for throat work. The localized treatment should not be prolonged enough to increase the inflammatory conditions.

LEUCORRHOEA. Mrs. J. has been coming to me for treatment for some months but no relief was apparent by the old-fashioned methods of treatment. Upon her next call after I had installed my Campbell coil I decided to try its possible effects, using the vaginal vacuum electrode. I proceeded cautiously, using electrode but three minutes. Insisted upon daily treatments, increasing the length gradually to ten minutes. Patient was discharged apparently well after four weeks; no recurrence of trouble noted after an interval of six months.—Dr. P. R. D.

LOCOMOTOR ATAXIA. Physicians should not discredit electrical treatment for this disease because it will not yield in every case. Its progress can be retarded, however, pain relieved and the use of opiates and drugs elimated.

"R. T. U. came into my office supported by an attendant on either side. It was unnecessary for him to struggle in again for I took my Portable to his home. After daily treatments for four weeks, he surprised me by walking nearly a mile and up a flight of stairs to my office. He said: 'One good turn deserves another,' and paid his bill. The amount received was a good proportion of the first cost of the coil."

"I took the coil to the home of another sufferer (on recommendation of first patient) who had been confined to her bed for over two years. This patient also walked into my office within a month.

Besides the general application of current for tonic effects, I used a special vacuum electrode frame containing seven tubes, on which I allowed patients to sit or recline for twenty minutes at a time. Treatments were given daily."—Dr. T. A. C.

LUMBAGO.—Immediate relief with subsequent apparent cure follows the use of the High Frequency currents in Lumbago. I have also used the D'Arsonval attachment to get a strong reaction which takes the place of vibratory massage and with, I believe, better results.—Dr. J. Q. A.

LUPUS. Middle aged man with lupus patch of twenty years standing, about tbe size of half a dollar, at corner of mouth. During this time had been treated by caustics and other methods but gradually growing worse in spite of temporary improvement. Two treatments were given two days apart with high vacuum X-Ray tube held at one foot distant for fifteen minutes. Such an amount of irritation followed second treatment that it was discontinued for two weeks. Then irritation had disappeared, scab was dry and hard and inclined to separate at the edges. Thirteen treatments were given, before the last of which the scab had dropped off leaving slight scar which has since bleached, leaving very slight disfigurement.—Dr. C. F.

Treatment for lupus in the same as for epithelioma, the destructive effect should be obtained and the surrounding parts properly protected. As high as eighty per cent. of cures have been reported by this method.

MOLES. The High Frequency spark from one of the small vacuum electrodes as strong as can be borne until the mole becomes bloodless. This can be done under cocaine with less pain and in less time.

NEURALGIA. Female patient, age 50, was subject to chronic attacks of acute pain in the supra-orbital nerve, often accompanied by swelling and congestion of the eye-ball. The attacks were reported as occurring about once in three weeks and patient had several times resorted to morphine for relief. The first two treatments of ten minutes each with the High Frequency applied with the surface electrode, followed by auto-condensation and

gentle massage over affected nerve, reduced swelling and relieved pain. Pain ceased entirely after six treatments. Treatments given every other day for six weeks with no recurrence of attacks. Patient has called once a month for the last six months for general treatment—not because of recurring neuralgia, but because she enjoyed the tonic effects of the treatments.—Dr. W. A. J.

NEURITIS. Dr. B. was visited by a woman, 43 years old, who had suffered for three years with severe pains in her right arm and shoulder. Other physicians had bandaged, poulticed, and painted the affected member, finally advising "letting it wear itself out." Dr. B. used the High Frequency current applied to exposed surface with vacuum electrode, accompanied by gentle massage. The patient says: "I felt the best I had felt in years after the first treatment and I went every day. Before the end of the first week all the pain was gone, I could move my arm easily and my general health was much improved. I kept the treatment up for another week. This was a year ago and I have been all right ever since."

This is but one of scores of similar cases reported. So uniform are the reports of successful treatment of this annoying condition by the High Frequency that it may be considered as almost a specific.

NERVOUS DEBILITY. "I undoubtedly saved a young woman, 27, from a serious attack of nervous prostration. She had become chronically affected with insomnia, ate little, was badly run down and was taking frequent doses of morphine to "put her to sleep." After prolonged auto-condensation treatments daily for four weeks, natural sleep was restored; after daily treatment for three months, health was completely restored."—Dr. E. B.

NEURESTHENIA. This condition is treated with better success by some form of High Frequency current than any other method, either electrical or medical. The D'Arsonval is usually most efficient as well as most easily applied. Our "Auto-Pad" will be found indispensable in the treatment of these cases. It can be used in an ordinary chair and requires no special preparation on the part of the patient. The Thermo-Faradic current will give the patient 300 or 400 milliamperes of current with absolutely no sensation, while with our regular D'Arsonval attachment from 800 to 900 can be obtained.

PSORIASIS. Patient, a woman, suffering aggravated attack, involving entire trunk, both chest and back, and posterior aspect of thighs down to knees. Made ten minute exposure of entire chest and back with high vacuum tube, anode eighteen inches from the surface that as much area as possible might be covered. Relief after first treatment; after third profuse desquamation, cessation of irritation and no new invasion. Cure complete after five treatments and no return of disease at the end of five years.—Dr. C. H. F.

This is one of some twenty cases which have been treated by this physician with but one failure. In that case the patient insisted on too frequent treatments as he wished to hurry up the cure. A slight dermatitis followed which so discouraged the patient that he abandoned the treatment. All other cases were completely relieved in from three to a dozen treatments and invariably given with a high tube at intervals not less than once in five days, his theory being that the beneficial effect is from the tonic rather than destructive effect of the ray, and that the benefit occurs from stimulation of the peripheral nerves rather than direct action on the lesion. The results seem to substantiate the technique if not the theory.

RHEUMATISM ACUTE. Patient, female, 40, was great sufferer with all the sequelæ, of anæmia, insomnia, and muscular atrophy; left arm was quite useless, joints stiffened and painful. Treated patient in her bed by means of Campbell portable coil, passing flat glass electrode over entire surface of the body. Time of first four treatments on alternate days was half an hour. After two treatments insomnia disappeared and patient improved so rapidly that for subsequent treatments she came to my office. Auto-condensation couch was then used, treatments lasting ten minntes. After two months with treatments three times weekly patient appears entirely relieved. Massage was used in conjunction with the current.—Dr. R. E. V.

RING-WORM. X-Ray has proved very efficient in these cases and in Ring-worm of the scalp, nearly a specific. Ten minutes, medium tube twelve inches is the usual method.

RODENT ULCER. Same treatment as epithelioma.

SARCOMA. Young lady has been twice operated upon for sarcoma of lobe of left ear, with recurrence each time. Conditions, tenderness, some induration and constant oozing, forming moist scab. Five treatments were given with high vacuum X-Ray tube at one foot. All tenderness disappeared, induration was removed and scab became dry. Patient did not return for seven or eight months, when a slight tenderness was manifest. Twelve treatments were then given and patient discharged with no evidence of trouble save loss of tissue from early operations and slight scar.—Dr. C. F.

SCIATICA. A blacksmith, big and husky, age 48, came to me for treatment after suffering severely for nearly a year. He was in constant pain. By the application of the High Frequency current ten minutes daily for two weeks with surface electrode following brief treatments on the auto-condensation couch the pain was entirely removed. I should mention that massage accompanied the treatments. Has reported frequently during the last two years that there has been no recurrence of the pain.—Dr. T. A. R.

SPRAINS. Patient female, had badly sprained and bruised right wrist, effusion of blood unusually abnormal. Two treatments with High Frequency

current for fifteen minutes at an interval of forty-eight hours, reduced swelling and discoloration. Patient telephoned next day that the wrist was all right and that she would not need another treatment.—Dr. A. S. R.

STOMACH, (See Indigestion, Dyspepsia, Gastritis) **ATONIC DILITATION OF.** My records show two cases both of which were referred to me by physicians who were not equipped for electrical treatment. Both were relieved after the first treatment with effluve from your High Frequency coil applied for five minutes in one case and eight in the other, followed by auto-condensation. Treatments were given daily, except for unavoidable interruptions, for three weeks. After nine months there is no recurrence of trouble.—Dr. W. E. D.

SYCOSIS. These cases are amenable to the X-Ray or High Frequency treatment, medium tube for eight or ten minutes at twelve inches supplemented by the vacuum electrode, will usually cure the case.

TORTICOLLIS. A young woman came to me with her head stiffly held to one side. She was anæmic and a great sufferer. Scores of suggested remedies had been tried and many physicians consulted. Three applications of High Frequency on alternate days with vacuum electrode passed over neck and shoulder gave entire relief. Patient continued general treatment, however, twice a week for four weeks. Result permanent.—Dr. M. A. R.

TRACHOMA. A young man, age 25, employed in a cotton mill, came to me to see what my machine could do as a last resort. I gave careful advice as to diet, and general mode of life, emphasizing cleanliness and began auto-condensation treatment accompanied with massage of eyelids, and also very fine current through the special eye electrode. Treatments twice a week continued for three months. Complete cure is apparent. —Dr. P.

TUBERCULOUS GLANDS (See Cervical Glands.) Girl aged eight, family history tuberculous, cervical glands much enlarged on both sides. High Frequency treatment given daily for fifteen minute periods. Swelling reduced after first week; after six weeks cough almost gone and glands could be discovered only on close examination. Treatments were interrupted for a month. Resumed and continued for two months when glands had disappeared and patient was in greatly improved general health, which has continued.—Dr. W. B.

The X-Ray for about five minutes, in addition to the High Frequency current through the vacuum tube, will materially assist in curing these enlarged glands. Superficial tubular lesions of all sorts, including ulcerations, sinuses and tuberculosis of the skin and smaller joints, have been reported cured by means of the High Frequency current.

TUBERCULAR AREA in posterior part of right lung. Patient female, 36; High Frequency treatment daily lasting from five to eight minutes during a period of four weeks. General health of patient much Improved. Acne on back which was very severe disappeared while lung was being treated.—Dr. S. A. D.

TUMOR, FIBROID. "Patient 46 years old, married, two children; good health till two years previous; then menstruation began to be too frequent; periods came every ten days, finally practically continuous flow and very profuse; had usual nervous symptoms; pronounced pressure symptoms above pelvis."

"Bi-manual examination revealed large fibroids involving particularly anterior portion uterine walls extending to posterior portion in lesser degree; mass extended quite as high as level of umbilicus; vagina was drawn up into a long canal; constipation pronounced; defecation with great difficulty; extreme sensation of weight about pelvis.

"Operation refused and physician refused to accept further responsibility for treatment. Nineteen treatments were given during a period of five months with the X-Ray. A soft tube was used, held at eight inches from the abdomen, and the duration of treatment was from ten to fifteen minutes; no removal of clothing except corset; rapid and absolute disappearance of the mass; last application July, 1906; October 16, 1907, patient in perfect health. Menstruation regular but decreasing owing to change of life. Has gained flesh and looks well. During period of observation before treatment thyroid and eralgine were administered; no relief. No medicine was given during the treatment with the X-Ray or for two months previous."--Dr. W. F. J.

TUMOR, UTERINE. Mrs. R. S., 40 years old, came to me for treatment after being told by other physicians that only an operation could afford relief. Applied High Frequency by vacuum electrode five to seven minutes daily. Patient's general health improved from the first. Tumor appeared to be reduced after ten treatments. Then treated on alternate days for two months when tumor was completely reduced.—Dr. G. J. B.

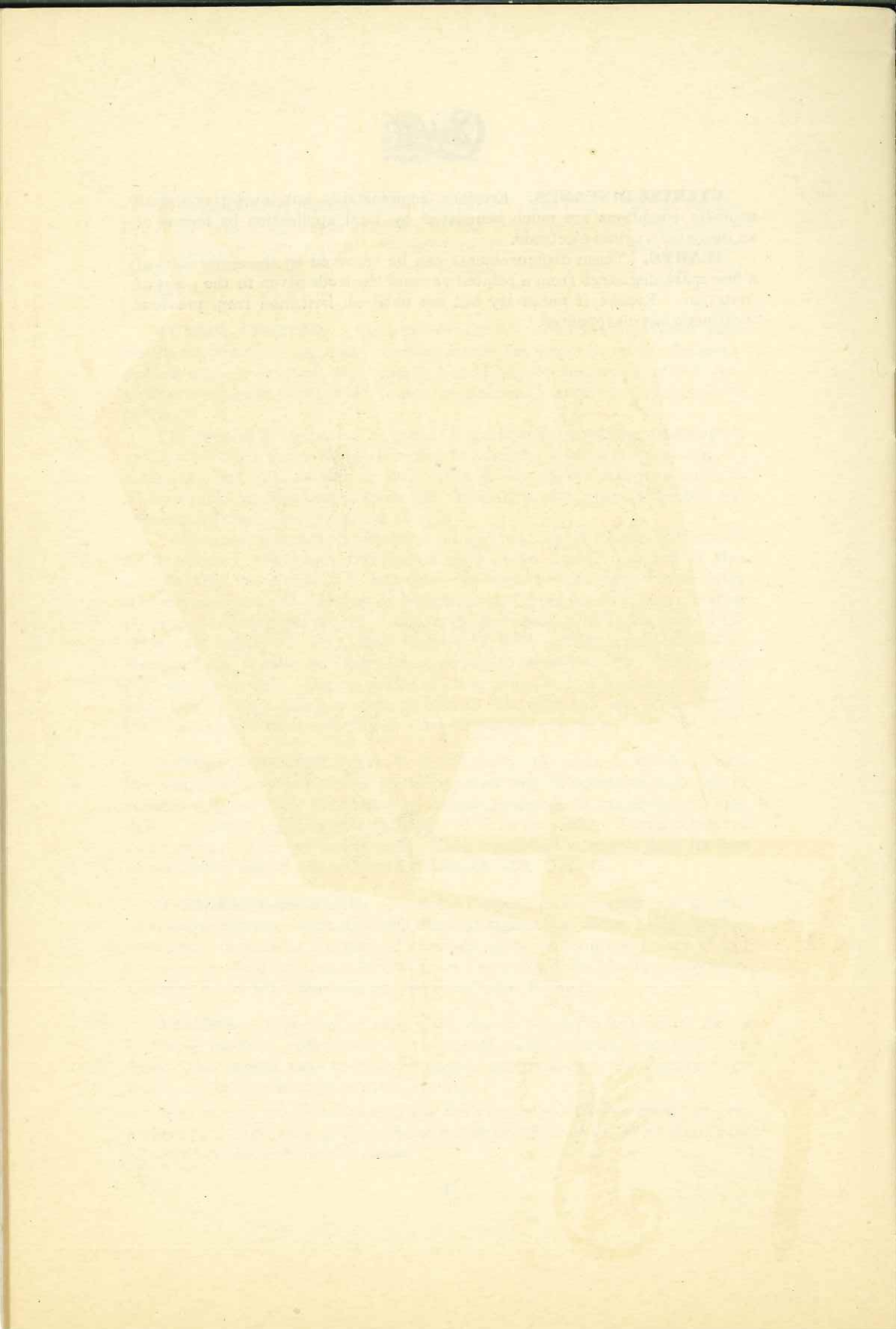
TUMORS, VASCULAR. In several cases I have checked the growth of vascular tumors, seemingly with the first application of the X-Ray applied cautiously, increasing the time of exposure up to ten minutes. Care should be taken to avoid burning. In two cases I completed the absorption by electrolysis; in the third this was not required.—Dr. F. A. P.

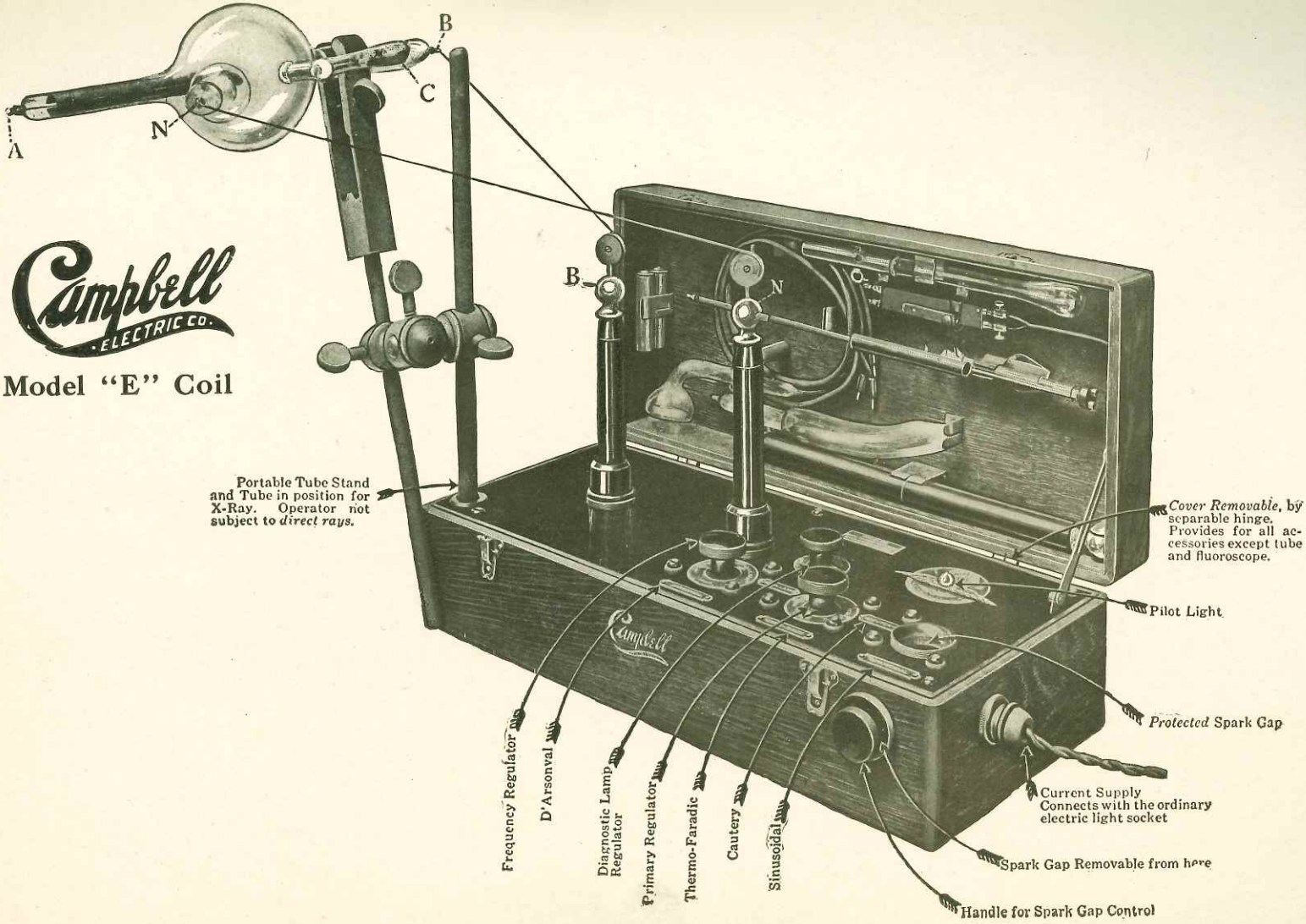
ULCERS. A number of reports of the successful treatment of ulcers including indolent, rodent and syphilitic are made by many operators. In these cases results have been accomplished by the X-Ray, the vacuum electrode, and their combined or alternate use.

Best results are obtained by using the vacuum electrode through several layers of bandage, thus getting the stimulating effect of the short spark and an abundant development of ozone.

UTERINE DISEASES. Erosions, emdometritis, sub-involution and all neurotic conditions are much benefitted by local application by means of an insulated vaginal electrode.

WARTS. These disfigurements can be removed by the application of a fine spark discharge from a pointed vacuum electrode given to the point of irritation. Repeat if necessary but not until all irritation from previous treatment has disappeared.





Campbell ELECTRIC CO.

Model "E" Coil

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